Mental health and poor recovery in female nursing workers: a contribution to the study of gender inequities

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ABSTRACT

Objective. *To address the association between work and mental health from a gender perspective by investigating the combination of domestic work and adverse aspects of professional work (night shifts and psychosocial stress) with regard to minor psychiatric disorders (MPD) and poor recovery from work.*

Methods. *A cross-sectional study was carried out at three public hospitals in Rio de Janeiro, Brazil, in 2006 (n = 1 122). Data collection was based on a census of all female nurses, technicians, and auxiliary nurses. A multidimensional instrument containing information about health, professional work, and the domestic work was used. The domestic work hours (longer or shorter than 10 hours per week) were combined with the work schedule (day or night shifts) and with psychosocial stress (absence or presence of effort-reward imbalance [ERI]). These combinations were tested with regard to the association with MPD and poor recovery from work. The adjusted odds ratios (OR) and their confidence intervals were calculated using multiple regression models.*

Results. *The combination of long domestic work hours with night work was significantly associated with MPD (OR = 1.94) and poor recovery (OR = 2.67). Long domestic work hours combined with the presence of ERI resulted in significantly higher odds ratios (OR = 4.37 and OR = 5.53, respectively). In all analyses, greater odds ratios were observed in groups with long domestic work hours, compared to short work hours.*

Conclusions. *These findings suggest that carrying out domestic activities over a certain number of hours can increase the detrimental consequences of professional work in regard to MPD and poor recovery. The interaction between professional and domestic work and its potential implications to mental suffering must be considered in discussions on health equity.*

Keywords Gender identity; mental health; equity; women's health; women, working; occupational health; Brazil.

The impact of social determinants of mental and physical health is widely recognized; yet, experts in this area have pointed to a lack of studies on gender-based differences in morbidity. Biomedical research has identified sex-related differences—excluding social roles, expectations, and constraints—that can influence health (1). There are underlying factors from the social construction of illness that contribute to the negative consequences that socioeconomic and cultural forces can have on health. Differences in morbidity among different groups of people, which could be avoided by reasonable action, are considered unfair. These imbalances are called *health inequity* (1, 2).

In the field of mental health, gender inequities are expressed as increased psychiatric morbidity among women (3). In this context, it is important to recognize the process of gender socialization,

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i.e., the construction of differences between men and women. For example, women are most commonly associated with private spaces and fragility, whereas men are associated with public spaces and strength (4). Thus, in society, different values are associated with masculine and feminine identity that can then influence health patterns, such as a perception of having less control over one's personal circumstances, a greater general expression of symptoms, and a greater demand for health services by women (5). From this perspective, differences in the manifestation of psychiatric symptoms arise from the social relationships of subordination and domination that are expressed differently according to gender (3). As a result, gender stereotypes are created, and consequently people believe that women experience more anxiety and depression than men (5).

Over the past few decades, the increasing participation of women in the labor market has created a challenge with regard to psychiatric outcomes. On the one hand, professional employment tends to benefit the mental health of women, with results varying according to the outcome and type of occupation (6). These effects are mediated by financial and social support and opportunities for success (6), while reducing the low social status assigned to domestic work (7). On the other hand, psychiatric symptoms have also been associated with the simultaneous engagement in a paid job, plus unpaid housework (8). These findings are expressed in time-use data from past decades, according to which the greater participation of women in paid work was not accompanied by a proportional increase in men in the domestic sphere (9). The greater burden of work for women compared to men can influence morbidity (10), giving rise to potential gender inequities in mental health (11).

The complex etiology of mental health requires analyses that incorporate both living and working conditions (12). In this context, one should consider that many domestic activities need to be done urgently and cannot be postponed, thus inhibiting recovery or "down-time" after professional work (13). Therefore, in addition to psychiatric symptoms themselves, analyses in this area should include aspects of recovery with regard to work, given that poor recovery favors the manifestation of physical and psychosomatic symptoms in several categories of workers (14).

This study focused on the associations between work and health from a gender perspective, taking into account domestic work and its interaction with the professional work of a group of nursing staff. The time dedicated to domestic tasks was investigated, as well as two characteristics of nursing that are associated with mental suffering: night shift work (15, 16) and psychosocial stress, which were analyzed using effort-reward imbalance (ERI) model (17, 18). The ERI concept is derived from an important theoretical model that states that occupational stress arises from the failed reciprocity of exchange in one's professional life. According to this theoretical model, situations requiring great effort and dedication that are not accompanied by financial gain or work security are highly stressful and have repercussions on health (19).

In an effort to contribute to the debate on the possible role of domestic responsibilities on gender inequities in mental health, this study aimed to investigate the combination of domestic work and aspects of professional work (night shifts and psychological stress) and their association with minor psychiatric disorders and poor recovery from work.

MATERIALS AND METHODS

Sampling and data collection

A cross-sectional study was carried out in three public hospitals in Rio de Janeiro, Brazil, from January–December 2006. Data collection was based on a census of all nurses, technicians, and auxiliary nurses who attended patients. Only the female workers were analyzed since the reduced size of the male sample (n = 202) led to a loss of statistical power.

Data were collected in the hospitals using a comprehensive instrument divided into two parts. The first part contained detailed information about the time dedicated to domestic and professional work, including working hours in other hospitals. The data were recorded by a trained interviewer to guarantee data quality. The second part of the instrument included several scales used in epidemiological literature, including an assessment of minor psychiatric disorders (20), a measure of recovery from work (21), and a scale of psychosocial stress in the workplace according to the effort-reward imbalance model (19).

The study was approved by the Ethics Committee of Fiocruz, as well as that of each hospital included in the study. The participants were informed of the study objectives and aspects of ethical research issues; all participants submitted signed consent forms.

Definition of study variables and data processing

Two variables related to working in hospitals were studied: psychosocial stress, assessed using the ERI, and working hours, taking into account all of the participants' professional contracts. The ERI was investigated using the Brazilian version (22) of the questionnaire developed by Siegrist (19), which assesses the association between effort spent (due to physical exertion, work pace) and rewards (job stability, career opportunities). The evaluation of effort and reward is based on a Likert scale, in which each statement corresponds to five response options, i.e., 1–5. The score for effort (six questions) can range from 6–30, while that of reward (11 questions) is from 11–55. Each participant was assigned a ratio (effort score/reward score) that was multiplied by a correction factor derived from the difference in the number of items for effort and reward (23). The final score was divided into terciles (23), with individuals in the upper tercile being categorized as showing ERI, while participants in the bottom two terciles formed the reference group. This gave rise to two groups reflecting the presence and absence of ERI, respectively.

Classifying workers according to their work schedule was based on the question, "Do you regularly work night shifts in nursing care at a healthcare facility?" The interviewers defined "regularly" as "at least once a week." For workers who were considered to have a lot of variation from one week to another, the interviewers specified "at least four nights a month." Those who responded "yes" were considered to be night workers (risk group), whereas those who responded "no" were considered day workers, that is, the reference group.

Domestic workload was analyzed based on the time dedicated to house-

hold tasks per day during one week, here referred to as the "domestic work hours." This time was estimated based on the question, "In the past week, approximately how many hours did you dedicate to household tasks?" The interviewers recorded the time spent on household tasks the day before the interview, the day prior to this and so forth, until 7 consecutive days were recorded. This question was followed by, "Do these hours of domestic work stated in the previous question correspond to your normal activity?" with the response options being "yes," "no, I usually work at home more hours per week," and "no, I usually work at home fewer hours per week." The data of workers whose response was, "no, I usually work at home fewer hours per week" were excluded from the analysis. The test-retest reliability of domestic work hours per week, assessed by means of the population intraclass correlation coefficient (ICCC), was 0.678 (95% confidence interval [95%CI] = 0.487–0.807) (24). The sample of the workers was subdivided into two groups, with 10 hours per week being the cut off (25); the two groups corresponded to a long and short domestic work hours, with the latter being considered as the reference group.

A measure of minor psychiatric disorders (MPD) and the need for recovery from work were the outcome variables for the study. MPD were assessed by means of a self-reported questionnaire (SRQ-20), recommended by WHO (20), with the cut-off used being 5/6 (7). The recovery of workers was analyzed using a Portuguese version of the Need for Recovery from Work Scale (21, 26), adapted from the English version (21). The scale included a set of 11 statements, an example being: "My job makes me feel rather tired at the end of the day." For each statement, the response options were "yes" and "no," with the final score corresponding to the number of "Yes" responses, which varied from 0–11. The upper quartile was used as a limit to define "poor recovery" (27). The intraclass correlation coefficient for the population in the current study was 0.80 (95%CI = 0.70–0.87) (24, 25).

By classifying the workers according to ERI and work schedule, four exposure categories were created: (i) not exposed to any risk factor (reference group); (ii) exposed to at least one risk factor; (iii) exposed to another risk factor; and (iv) exposed to both risk factors. This categorization gives the following combinations: absence of ERI–short domestic work hours, absence of ERI–long domestic work hours, presence of ERI–short domestic work hours, and presence of ERI–long domestic work hours. The same process was carried out with regard to work schedule, with the following combinations: day work–short domestic work hours, day work–long domestic work hours, night work–short domestic work hours, and night work–long domestic work hours.

These combinations were tested with regard to the outcome variables using logistic regression analyses to estimate the association after adjusting for potential confounding variables. The analyses were carried out using IBM SPSS Statistics software, version 18 (SPSS Inc., an IBM company, Chicago, Illinois, United States)

RESULTS

In total, 1 307 workers participated in the study (89.4% of the target group). Reasons for participant dropout were refusal to take part in the study, sick leave, holiday, or another type of absence two weeks prior to data collection. The data of 185 individuals, whose responses indicated a working day below the normal standard or who had inconsistencies in their answers were excluded, bringing the final number to 1 122 participants.

The mean age of the group was 40.5 ± 12.8 years. The majority worked as a technician or an auxiliary nurse (72.4%); the rest were registered nurses. Approximately half of the participants (56.0%) were single, divorced, separated, or widowed; the rest were married or living as an unmarried couple. A total of 307 workers (27.4%) had children under the age of 14 years. The average *income per capita* was approximately US$ 451; and 38.7% were university graduates or post-graduates. An average of 46.5 ± 19.1 hours were worked per week in the workplace, with an average of 16.5 ± 15.3 hours per week being worked at home. The prevalence of MPD was 41.9%. The average value of the need for recovery from work was 5.8 ± 2.5 on a scale of 0–11.

Table 1 describes the profile of the groups studied according to the combination of ERI and domestic work hours. With regard to both absence and presence of ERI, participants working more at home spent less time in the workplace, were more likely to have a lower family income, be married, have children less than 14 years of age, were primarily technicians and auxiliary nurses, and had a greater prevalence of MPD and poor recovery. The sampling description according to the combination of work schedule and domestic work hours is presented in Table 2. A profile similar to that of Table 1 was observed with regard to length of domestic work hours according to the studied variables.

The regression analyses revealed significant associations between the combination ERI-long domestic work hours and both outcomes. Significant associations were also observed between the combination night work–long domestic work hours and both poor recovery and MPD (Tables 3 and 4). The probability of showing poor recovery in the group with the combination night work–long domestic work hours was greater than double that for a short domestic work hours. The combined analysis of Tables 3 and 4 shows that higher adjusted odds ratios correspond to the combination of ERI with long domestic work hours with a value of 5.5 and 4.4 with regard to poor recovery and MPD, respectively.

DISCUSSION

Evidence of the detrimental effects that the combination of professional work and long domestic work hours have on an individual's mental health provides support for the simplest definition of social determinants of health, as suggested by WHO: the conditions in which people *live* and *work* (2). Altogether, the results suggest that domestic work influences the link between adverse aspects of professional work and a woman's mental health. The increase in odds ratio for both outcomes in groups with long domestic work hours (compared with a short work hours) suggests that more time spent carrying out domestic activities increases the consequences of professional work with regard to poor recovery and MPD. These results support the theory by Berntsson and colleagues (28) that professional work benefits women in terms of financial independence, an increase in self-esteem, and greater social network. However,

TABLE 1. Sampling description (*n* = 1 122) of sociodemographic variables, factors related to professional and domestic work, considering the combination of effort-reward imbalance (ERI) and domestic work hours in female nursing workers, Rio de Janeiro, Brazil, 2006

Variable	Psychosocial work stress			
	Absence of ERI		Presence of ERI	
	Short domestic work hours	Long domestic work hours	Short domestic work hours	Long domestic work hours
Age in years, mean	38.8	43.1	33.1	41.5
(standard deviation)	(13.8)	(11.5)	(11.2)	(11.5)
Living with partner (%)				
Yes	33.4	53.5	31.3	48.8
No	66.6	46.5	68.7	51.2
Children less than 14 years of age (%)				
No	81.1	62.6	80.4	68.4
Yes	18.9	37.4	19.6	31.6
Monthly family income (%)				
≤ US$ 391	59.9	70.1	44.7	63.2
> US$ 391	40.1	29.9	55.3	36.8
Professional category (%)				
Nursing assistants/aides	70.1	82.9	49.7	70.4
Registered nurses	29.9	17.1	50.3	29.6
Number of jobs (%)				
One	58.5	73.2	52.1	61.2
Two or more	41.5	26.8	47.9	38.8
Weekly professional work hours, mean	47.3	42.7	53.3	46.8
(standard deviation)	(18.6)	(17.5)	(22.1)	(19.0)
Domestic work hours, mean	6.4	24.9	5.8	25.3
(standard deviation)	(4.6)	(16.7)	(4.5)	(14.7)
Minor psychiatric disorder (%)	26.1	32.6	63.2	65.0
Poor recovery (%)	11.9	19.1	39.9	49.5

TABLE 2. Sampling description (*n* = 1 122) of sociodemographic variables, factors related to professional and domestic work, considering the combination of work schedule and domestic work hours in female nursing workers, Rio de Janeiro, Brazil, 2006

Variable	Work schedules			
	Day work		Night work	
	Short domestic work hours	Long domestic work hours	Short domestic work hours	Long domestic work hours
Age in years, mean	40.2	43.8	34.7	42.0
(standard deviation)	(14.1)	(11.9)	(12.2)	(12.8)
Living with partner (%)				
Yes	34.1	52.8	32.0	53.6
No	65.9	48.2	68.0	46.4
Children less than 14 years of age (%)				
No	84.5	67.0	77.6	62.9
Yes	15.5	33.0	22.4	37.1
Monthly family income (%)				
≤ US$ 391	56.3	69.1	45.0	68.3
> US$ 391	43.7	30.9	55.0	31.7
Professional category (%)				
Nursing assistants/aides	63.8	81.7	61.4	76.5
Registered nurses	36.2	18.3	39.6	23.5
Number of jobs (%)				
One	77.4	82.5	34.4	49.8
Two or more	22.6	17.5	65.6	50.2
Weekly professional work hours, mean	41.4	38.6	58.8	51.8
(standard deviation)	(15.1)	(13.2)	(21.5)	(20.5)
Domestic work hours, mean	6.7	24.2	5.8	26.5
(standard deviation)	(4.5)	(13.6)	(4.6)	(18.6)
Minor psychiatric disorder (%)	34.0	40.3	42.8	51.8
Poor recovery (%)	18.8	23.7	23.6	39.0

according to these authors, a beneficial situation can also lead to deterioration in health if the workload becomes too high. Therefore, the total accumulation of both domestic and professional tasks should be considered when classifying work outside the home as either advantageous or disadvantageous. Although comparing groups of men and women is desirable in gender studies, the profile of the female nursing teams did not allow for a comparable male sample to be assessed. However, the gender asymmetry in the division of domestic work (7) favors gender differences with higher mental risks among women.

The influence of the domestic work on the link between night work and recovery is possibly due to carrying out domestic activities during the day after professional work, when there would be a greater need to recover from the psycho-physiological wear of night shifts (29). Prioritization of the domestic sphere among women (30) does not seem to be modified by night work, as hospital empirical data has suggested (31). On the contrary, choosing night shifts was frequently attributed to a higher probability of undertaking domestic work and care of children or the elderly during the day (31). Thus, choosing night shifts can be seen as a result of the expectations associated with females, as it is a strategy used to resolve the demands of professional and domestic spheres.

The ERI is most strongly associated with poor recovery and MPD, rather than night work. In fact, with the adjusted data, the presence of ERI corresponded to odds ratios greater than 3.0, even for workers with a short domestic work hours. In the case of ERI, an increase in odds ratio with regard to long domestic work hours (compared with short work hours) is of a lower magnitude than that observed for night work, suggesting the relevance of psychosocial environment with regard to recovery and mental suffering. These results refer to a meta-analysis (32) that indicated a strong, causal association between ERI and increased risks to mental health.

The findings of the current study reveal that the volume of domestic work can influence how adverse factors at work affect mental health. Previous analyses that considered both professional and domestic work placed emphasis on the total work load (professional plus domestic work hours), with an in-

TABLE 3. Odds-ratio for minor psychiatric disorders, according to the combination of employment and household variables in female nursing workers (*n* = 1 122), Rio de Janeiro, Brazil, 2006

Exposure variable	No.	Crude odds ratio 95%CI[a]	Adjusted odds ratio (95%CI)[b]
Effort-reward imbalance (ERI) and domestic work hours			
Absence of ERI and short domestic work hours	318	1	1
Absence of ERI and long domestic work hours	340	1.401 (0.994–1.976)	1.594 (1.091–2.691)
Presence of ERI and short domestic work hours	163	4.966 (3.289–7.498)	3.228 (2.082–5.006)
Presence of ERI and long domestic work hours	206	5.605 (3.797–8.274)	4.371 (3.849–6.706)
Work schedule and domestic work hours			
Day work and short domestic work hours	265	1	1
Day work and long domestic work hours	355	1.389 (0.976–1.977)	1.377 (0.931–2.036)
Night work and short domestic work hours	250	1.576 (1.084–2.293)	1.189 (0.773–1.828)
Night work and long domestic work hours	251	2.174 (1.487–3.178)	1.938 (1.266–2.967)

[a] 95% confidence interval.
[b] Analysis of work schedule adjusted by age, professional work hours, control-demand, and effort-reward ratios; analysis of ERI adjusted by age, professional work hours, control-demand ratio, and work schedule.

TABLE 4. Odds-ratio for poor recovery from work, according to the combination of employment and household variables in female nursing workers (*n* = 1 122), Rio de Janeiro, Brazil, 2006

Exposure variable	No.	Crude odds ratio (95%CI)[a]	Adjusted odds ratio (95%CI)[b]
Effort-reward imbalance (ERI) and domestic work hours			
Absence of ERI and short domestic work hours	318	1	1
Absence of ERI and long domestic work hours	340	1.701 (1.097–2.636)	1.710 (1.091–2.681)
Presence of ERI and short domestic work hours	163	4.663 (2.929–7.424)	3.536 (2.161–5.786)
Presence of ERI and long domestic work hours	206	7.250 (4.673–11.249)	5.526 (3.448–8.856)
Work schedule and domestic work hours			
Day work and short domestic work hours	265	1	1
Day work and long domestic work hours	355	1.397 (0.921–2.119)	1.215 (0.777–1.901)
Night work and short domestic work hours	250	1.349 (0.865–2.103)	1.208 (0.734–1.986)
Night work and long domestic work hours	251	2.900 (1.898–4.430)	2.668 (1.681–4.233)

[a] 95% confidence interval.
[b] Analysis of work schedule adjusted by age, professional work hours, control-demand and effort-reward ratios; analysis of ERI adjusted by age, professional work hours, control-demand ratio, and work schedule.

crease in hours relating to poor recovery (24). The relevance of both paid and domestic work with regard to health are dealt with by Rohlfs and colleagues (11), who suggest incorporating indicators of domestic and professional work in population surveys on health. With regard to official statistics, since 2001, the Brazilian Institute of Geography and Statistics has assessed the number of hours spent by the population doing household chores, considering them to be essential activities for social reproduction and the economics of the society (33). One of the potential analyses made possible by this measure is to reveal the total work hours of men and women in various socioeconomic contexts (34).

Greater time dedicated by women to work in professional and domestic spheres implies, "insecurity of life, fewer opportunities for social interaction and enjoyment of education benefits and culture, lack of rest and leisure – with direct implications on health" (35). The profile of the group with long domestic work hours reflects the demands of the domestic sphere (higher proportion of married workers and having children under 14 years of age), as well as factors of socioeconomic status, such as lower family income and a lower level of schooling. Studies of countries with a high income inequality, including Brazil, confirm how the female sex, low level of education, and poverty are highly associated with MPD, leading to different health risks depending on the social and economic factors (36).

Maintaining domestic work as a primarily female trait implies not only overloading due to an accumulation of work, but also difficulties in time management (37) with repercussions on health. Gender differences with regard to domestic work from a Brazilian perspective (9) can be seen as gender inequalities, which are actually social inequities, as they are unfair and unnecessary (38). The interrelation of the public and private spheres aids the understanding of this inequality, since it separates the home from the workplace, freeing up the men to enter the labor market due to women having to work at home (39).

Study limitations

The lack of data regarding male workers is a limitation since the associations could not be analyzed by gender. Moreover, as this was a cross-sectional study, the possibility of reverse causality cannot be ruled out because people who have poor recovery or those who are classified in the group with minor psychiatric disorders may be more sensitive to the combination of housework and adverse

occupational factors—in this case, the ERI and night work.

Conclusions

The interaction between professional and domestic work and its implications on mental health must be considered in a discussion of social determinants of health. As highlighted previously by the other researchers in this area (11), this broad definition of health requires the analysis of the impacts of social, political, and cultural constructs through the synergist action of policymakers, social health investigators, and epidemiologists to formulate guidelines that can help to effectively deal with health inequities.

Conflicts of interest. None.

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RESUMEN

Salud mental y recuperación deficiente del personal de enfermería femenino: una contribución al estudio de las inequidades por razón de género

Objetivo. Abordar la asociación entre trabajo y salud mental desde una perspectiva de género mediante la investigación de la combinación del trabajo doméstico y los aspectos adversos del trabajo profesional (turnos nocturnos y estrés psicosocial) con respecto a su asociación con trastornos psiquiátricos menores y la recuperación deficiente tras la actividad laboral.

Métodos. En el 2006, se llevó a cabo un estudio transversal en tres hospitales públicos de Rio de Janeiro (Brasil) (n = 1 122). La recopilación de datos se basó en un censo de todo el personal femenino de enfermería, técnico y auxiliar de enfermería. Se empleó un instrumento pluridimensional que contenía información acerca de la salud, el trabajo profesional y el trabajo doméstico. Se combinaron las horas de trabajo doméstico (más de 10 horas por semana, o menos de 10) con el horario de trabajo (turnos diurnos o nocturnos) y el estrés psicosocial (ausencia o presencia de desequilibrio esfuerzo-recompensa). Estas combinaciones se contrastaron con respecto a la asociación con trastornos psiquiátricos menores y la recuperación deficiente tras la actividad laboral. Se calcularon las razones de posibilidades ajustadas (OR) y sus intervalos de confianza mediante modelos de regresión múltiple.

Resultados. La combinación de muchas horas de trabajo doméstico con el trabajo nocturno se asoció significativamente con los trastornos psiquiátricos menores (OR = 1,94) y la recuperación deficiente (OR = 2,67). Muchas horas de trabajo doméstico combinadas con un desequilibrio esfuerzo-recompensa dieron lugar a razones de posibilidades significativamente mayores (OR = 4,37 y OR = 5,53, respectivamente). En todos los análisis, se observaron mayores razones de posibilidades en los grupos con muchas horas de trabajo doméstico, en comparación con los de pocas horas.

Conclusiones. Llevar a cabo actividades domésticas por encima de un cierto número de horas puede aumentar las consecuencias perjudiciales del trabajo profesional en cuanto a trastornos psiquiátricos menores y recuperación deficiente. En los debates sobre la equidad en salud se deben tener en cuenta la interacción entre el trabajo profesional y el doméstico, y sus potenciales implicaciones en cuanto al sufrimiento mental.

Palabras clave Identidad de género; salud mental; equidad; salud de la mujer; trabajo de mujeres; salud laboral; Brasil.